REMARKS

Pipes and lines are often cleaned by running a cleaning composition through the pipes and lines, whereas vessels often use spray devices to provide adequate liquid coverage to the walls by projecting the liquid outward, against the walls. (*See* specification at page 1, lines 20-28). Conventional spray devices are designed for liquid flow and require a sufficient amount of back pressure to cause the liquid to spray outward and make contact with the interior surface of the vessel, i.e. 20-25 psig for static spray devices, and more than 30 psig for rotating spray devices. (*See* specification at page 2, lines 1-10). Applicants have found that conventional spray devices used for conventional liquid flow fail to provide a desired spray pattern when used for delivering a multiphase treatment composition. (*See* specification at page 8, lines 15-17).

The delivery head of the present invention however provides delivery of a multiphase composition to the interior walls of a vessel by avoiding a large back pressure in the delivery head. The delivery head of the present invention includes a delivery arm and a spray diverter constructed to divert a multiphase composition flowing through the delivery arm and diverted by the spray diverter to provide a target spray pattern. The delivery head of the present invention is characterized by openings that are sized to reduce back pressure to less than about 10 psig when a multiphase composition is flowing through the delivery head at a liquid flow rate of about 2 gal/min to about 20 gal/min, and the volumetric ratio of gas to liquid is between 5:1 and about 75,000:1 at atmospheric pressure.

The Office Action fails to provide references that teach or suggest a delivery head characterized by openings that are sized to reduce back pressure to less than about 10 psig when a multiphase composition is flowing through the delivery head at a liquid flow rate of about 2 gal/min to about 20 gal/min, and the volumetric ratio of gas to liquid is between 5:1 and about 75,000:1 at atmospheric pressure for delivering a multiphase treatment composition to the interior walls of a vessel as claimed.

Claim rejections - 35 U.S.C. § 102

Claims 8-19 stand rejected under 35 U.S.C. 102(e) as being anticipated by *Labib et al.* (US 2004/0007255). Claims 8-19 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Labib et al.* (US 6,454,871). Claims 8-19 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Gruszczynski, II* (US 5,941,257). These rejections are traversed.

Labib et al. ('255), *Labib et al.* ('871), and *Gruszczynski, II* are directed to cleaning pipes or tubes with a multiphase composition.

Labib et al. ('255), *Labib et al.* ('871), and *Gruszczynski, II* fail to teach a delivery head including (1) a delivery arm attached to the multiphase cleaning composition inlet, (2) a spray diverter, and (3) an opening in the delivery head for delivering a multiphase cleaning composition to the interior surface of a vessel. Moreover, *Labib et al.* ('255), *Labib et al.* ('871), and *Gruszczynski, II* fail to teach a back pressure of less than about 10 psig when a multiple phase composition is flowing through the delivery head at a liquid flow rate of about 2 gal/min to about 20 gal/min, and the volumetric ratio of the gas to liquid is between about 5:1 and about 75,000:1 at atmospheric pressure since they fail to teach a delivery head.

Therefore, *Labib et al.* ('255), *Labib et al.* ('871), and *Gruszczynski, II* fail to anticipate the present invention. Withdrawal of the rejections is respectfully requested.

Claims 8-19 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Hei et al.* (US 6,183,708). This rejection is traversed.

Hei et al. are directed to a process for the pretreatment of a plant fluid effluent by contacting plant effluent with an aqueous solution, i.e. remove odor compounds from the atmosphere.

Hei et al. fail to teach cleaning a vessel with a multiphase cleaning composition. *Hei et al.* further fail to teach a delivery head including (1) a delivery arm attached to the multiphase cleaning composition inlet, (2) a spray diverter, and (3) an opening in the delivery head for delivering a multiphase cleaning composition to the interior surface of a vessel. Moreover, *Hei et al.* fail to teach a back pressure of less than about 10 psig when a multiple phase composition is flowing through the delivery head at a liquid flow rate of about 2 gal/min to about 20 gal/min, and the volumetric ratio of the gas to liquid is between about 5:1 and about 75,000:1 at atmospheric pressure since *Hei et al.* fail to teach a delivery head.

Therefore, *Hei et al.* fail to anticipate the present invention. Withdrawal of the rejection is respectfully requested.

Claims 8-19 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Simpson, II* (US 5,783,245). Claims 8-19 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Welch* (US 5,603,826). These rejections are traversed.

Simpson, II and *Welch* are directed to liquid cleaning spray systems.

Simpson, II and *Welch* fail to teach a multiple phase treatment composition inlet line. Therefore, *Simpson, II* and *Welch* fail to teach a delivery head for delivering a multiphase cleaning composition. Moreover, *Simpson, II* and *Welch* fail to teach a back pressure of less than about 10 psig when a multiple phase composition is flowing through the delivery head at a liquid flow rate of about 2 gal/min to about 20 gal/min, and the volumetric ratio of the gas to liquid is between about 5:1 and about 75,000:1 at atmospheric pressure since they fail to teach a multiphase cleaning composition inlet.

Therefore, *Simpson, II* and *Welch* fail to anticipate the present invention. Withdrawal of the rejections is respectfully requested.

Claims 8-19 stand rejected under 35 U.S.C. 102(b) as being anticipated by *Schleiffarth* (US 6,365,005). This rejection is traversed.

Schleiffarth is directed to a vapor compression distiller, which makes use of rapid, highly turbulent flow.

Schleiffarth fails to teach cleaning a vessel with a multiphase cleaning composition. *Schleiffarth* further fails to teach a multiple phase treatment composition inlet line. Therefore, *Schleiffarth* fails to teach a delivery head for delivering a multiphase cleaning composition. Moreover, *Schleiffarth* fails to teach a back pressure of less than about 10 psig when a multiple phase composition is flowing through the delivery head at a liquid flow rate of about 2 gal/min to about 20 gal/min, and the volumetric ratio of the gas to liquid is between about 5:1 and about 75,000:1 at atmospheric pressure since *Schleiffarth* fails to teach a multiphase cleaning composition inlet.

Therefore, *Schleiffarth* fails to anticipate the present invention. Withdrawal of the rejection is respectfully requested.

Election/Restriction

Election of a single invention, to which the claims must be restricted, has been required in the Office Action. The claims have been divided into the following groups:

Group I, claims 1-7, drawn to spray arm with plurality of articles.

Group II, claims 8-19, drawn to tank cleaning apparatus.

Group III, claims 20, drawn to method of cleaning hollow work piece.

Applicants respectfully traverse the Restriction Requirement and do not acquiesce to any statement in it. In addition, Applicants provide the following response to the Restriction Requirement.

Applicants respectfully request withdrawal of the Restriction between Groups I-III. The Office Action fails to provide proper basis for restricting claims 1-20. Group I (claims 1-7) is directed to a delivery head for delivering a multiphase composition, Group II (claims 8-19) is directed to a vessel including a delivery head for delivering a multiphase composition, and Group III (claim 20) is directed to a method for distributing a multiphase composition using a delivery head. As such, the claims of Groups I-III include a delivery head for delivering a multiphase composition.

The Office Action has not provided evidence of a delivery head for delivering a multiphase composition. The Office Action has also not provided evidence that that it would be unduly burdensome to search a delivery head designed for delivering a multiphase composition, a vessel including the delivery head for a multiphase composition, and a method for distributing a multiphase composition using a delivery head.

Applicants respectfully request that the Examiner examine all of the claims of Groups I-III.

If the Examiner does not join Groups I-III, Applicants respectfully request that the Examiner examine claims 8-19 of Groups II.

Conclusion

In summary, Applicants submit that each of claims 1-20 is in condition for allowance, and notification to that effect is earnestly solicited. The Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below, if the Examiner believes that doing so will expedite prosecution of this patent.

Respectfully submitted,

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